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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,140	07/21/2006	Naoko Sawatari	CU-4971 RJS	4987

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EXAMINER	
HON, SOW FUN	
ART UNIT	PAPER NUMBER
1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,140	SAWATARI ET AL.	
	Examiner	Art Unit	
	Sow-Fun Hon	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 July 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/10/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 12-28 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 6-14 of copending Application No. 11/039,278. Although the conflicting claims are not identical, they are not patentably distinct from each other because the presently examined claims fully encompass the conflicting claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

3. Claims 12, 19, 21, 23, 25, 27 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11,

19, 21, 23, 25, 27 of copending Application No. 10/587,069. Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 12, 23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Gibbons (US 2003/0232930 A1).

Gibbons teaches a liquid crystal display (abstract), wherein the liquid crystal display comprises a ferroelectric liquid crystal sandwiched between two substrates (cell, [0185]), wherein an electrode and a photoalignment film are each successively formed on opposite faces of the substrates facing each other (electrodes 2 on substrates 1, and optical alignment layers 3 formed thereon, cell, Fig.1, [0086]). Gibbons teaches that a constituent material of the respective photoalignment layer is a photoreactive material which generates a photoreaction to give anisotropy to the photoalignment film (capable of dimerization upon optical alignment, [0040]). Thus the constituent material of the respective photoalignment layer has a different composition with the ferroelectric liquid

crystal sandwiched therebetween (Example 19, method 2 [0185], method 2, activated polyimide, [0050], liquid crystal substances [0083]).

Regarding claim 23, Gibbons teaches that the ferroelectric liquid crystal layer only consists of the ferroelectric liquid crystal [0188] and does not contain any polymer network. Thus the ferroelectric liquid crystal is a liquid crystal which constitutes a single phase as defined in Applicant's specification (page 30).

Regarding claim 25, Gibbons teaches that the liquid crystal display is driven by an active matrix system using thin film transistors (active elements such as thin film transistors, [0086], active matrix liquid crystal display, [0168]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 19, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibbons as applied to claims 12, 23 and 25 above, and further in view of Yamazaki (US 2003/0058210 A1).

Gibbons teaches a liquid crystal display comprising a ferroelectric liquid crystal sandwiched between two substrates, wherein an electrode and a photoalignment layer are each successively formed on opposite faces of the two substrates facing each

other, and a constituent material of the respective photoalignment layer has a different composition with the ferroelectric liquid crystal sandwiched therebetween, as described above. Gibbons fails to disclose that the ferroelectric liquid crystal exhibits mono-stability, or that it does not have a smectic A phase in a phase series thereof.

However, Yamazaki teaches that when a monostable ferroelectric liquid crystal that does not have a smectic A phase in a phase series thereof (electrooptic characteristic of monostable FLC that exhibits isotropic-cholesteric-chiral smectic C phase transition, [0158]) is used in a liquid crystal display, it produces a half V-shaped switching mode, for the purpose of providing a low voltage driving and gray scale display (such electrooptical characteristic, [0159]).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a monostable ferroelectric liquid crystal that does not have a smectic A phase in a phase series thereof, as the ferroelectric liquid crystal in the liquid crystal display of Gibbons, in order to provide a low voltage driving and gray scale display, as taught by Yamazaki.

7. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gibbons as applied to claims 12, 23 and 25 above, and further in view of Walker (US 5,977,942).

Gibbons teaches a liquid crystal display comprising a ferroelectric liquid crystal sandwiched between two substrates, wherein an electrode and a photoalignment layer are each successively formed on opposite faces of the two substrates facing each other, and a constituent material of the respective photoalignment layer has a different composition with the ferroelectric liquid crystal sandwiched therebetween, as described

above. Gibbons, fails to teach that the liquid crystal display is driven by a field sequential color system.

However, Walker teaches that a field sequential color system is used to drive a liquid crystal display for the purpose of providing very high resolution (column 1, lines 49-61).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a field sequential color system to drive the liquid crystal display of Gibbons, in order to provide very high display resolution, as taught by Walker.

8. Claims 12-18, 24, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US 6,153,272) in view of Gibbons (US 2003/0232930 A1).

Regarding claims 12-13, 17-18, Kim teaches a liquid crystal display (column 8, lines 5-10) comprising a ferroelectric liquid crystal (column 14, lines 60-62) sandwiched between two substrates (liquid crystal cell, column 7, lines 15-20) wherein a photoalignment layer is formed on opposite faces of the two substrates facing each other (two glass plates that have been coated with a thin film of a polymer that have been optically fabricated, column 7, lines 15-20, polymer surface exposed to polarized light to align the covalently bound anisotropic component, column 7, lines 60-65). Kim teaches that a constituent material of the respective photoalignment layer is a photoisomerization-reactive compound which generates a photo-isomerization reaction to give anisotropy to the respective photo alignment layer, and is one that has an azobenzene skeleton (polymer surface that has a covalently bound anisotropic

component that can align in response to polarized light, column 1, lines 62-65, azobenzene group, isomerization, column 5, lines 55-60), and thus has a different composition with the ferroelectric liquid crystal composition that is sandwiched therebetween. Kim teaches that the azobenzene skeleton can be in the molecule of a compound (azobenzene group is incorporated into the main chain of the polymer, column 3, lines 35-38), or a side chain in a polymerizable monomer (azobenzene group is a side group on the main chain of the polymer, column 3, lines 35-36).

Kim fails to disclose that an electrode is successively formed on the opposite faces of the two substrates facing each other in the liquid crystal display.

However, Gibbons teaches that a liquid crystal display which comprises a ferroelectric liquid crystal sandwiched between two substrates (cell, [0185]), has an electrode and a photoalignment film each successively formed on opposite faces of the substrates facing each other (electrodes 2 on substrates 1, and optical alignment layers 3 formed thereon, cell, Fig.1, [0086]), wherein the electrodes are present for the purpose of providing the electrical stimulus for the liquid crystal medium of the liquid crystal cell.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have formed an electrode on the opposite faces of the substrates facing each other in the liquid crystal display of Kim, in order to provide the electrical stimulus for the liquid crystal medium of the liquid crystal display, as taught by Gibbons.

Regarding claims 14-16, Kim teaches that the photo-isomerization-reactive compound is a compound that has dichroism such that different absorptivities are exhibited depending on a polarization direction thereof and further generates the photo-isomerization reaction by light irradiation, wherein the photo-isomerization reaction is a cis-trans isomerization reaction (polymer surface that has a covalently bound anisotropic component that can align in response to polarized light, column 1, lines 62-65, when exposed to a polarized light source, the azobenzene groups have the highest isomerization probability, column 5, lines 55-60, thermally induced cis-to-trans isomerization spontaneously follows, column 5, lines 55-60).

Regarding claim 24, Kim teaches that teaches that the liquid crystal layer only consists of the liquid crystal (liquid crystal medium may contain a single liquid crystal, column 4, lines 32-35) and does not contain any polymer network. Thus the ferroelectric liquid crystal of Kim is a liquid crystal which constitutes a single phase as defined in Applicant's specification (page 30).

Regarding claim 26, Kim fails to disclose that the liquid crystal display is driven by an active matrix system using thin film transistors.

However, Gibbons teaches that a liquid crystal display is conventionally driven by an active matrix system using thin film transistors (active elements such as thin film transistors, are conventional constituents for liquid crystal display elements [0086], active matrix liquid crystal display, [0168]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used an active matrix system using thin film

transistors to drive the liquid crystal display of Kim, in order to provide a conventionally driven liquid crystal display, as taught by Gibbons.

9. Claims 20, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Gibbons as applied to claims 12-18, 23, 26 above, and further in view of Yamazaki (US 2003/0058210 A1).

Kim in view of Gibbons, teaches a liquid crystal display comprising a ferroelectric liquid crystal sandwiched between two substrates, wherein an electrode and a photoalignment layer are each successively formed on opposite faces of the two substrates facing each other, and a constituent material of the respective photoalignment layer has a different composition with the ferroelectric liquid crystal sandwiched therebetween, wherein the constituent material is a photo-isomerizable material comprising a photo-isomer compound which generates a photo-isomerization reaction to give anisotropy to the respective photoalignment layer. Kim in view of Gibbons, fails to disclose that the ferroelectric liquid crystal exhibits mono-stability, or that it does not have a smectic A phase in a phase series thereof.

However, Yamazaki teaches that when a monostable ferroelectric liquid crystal that does not have a smectic A phase in a phase series thereof (electrooptic characteristic of monostable FLC that exhibits isotropic-cholesteric-chiral smectic C phase transition, [0158]) is used in a liquid crystal display, it produces a half V-shaped switching mode, for the purpose of providing a low voltage driving and gray scale display (such electrooptical characteristic, [0159]).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a monostable ferroelectric liquid crystal that does not have a smectic A phase in a phase series thereof, as the ferroelectric liquid crystal in the liquid crystal display of Kim in view of Gibbons, in order to provide a low voltage driving and gray scale display, as taught by Yamazaki.

10. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Gibbons as applied to claims 12-18, 23, 26 above, and further in view of Walker (US 5,977,942).

Kim in view of Gibbons, teaches a liquid crystal display comprising a ferroelectric liquid crystal sandwiched between two substrates, wherein an electrode and a photoalignment layer are each successively formed on opposite faces of the two substrates facing each other, and a constituent material of the respective photoalignment layer has a different composition with the ferroelectric liquid crystal sandwiched therebetween, wherein the constituent material is a photo-isomerizable material comprising a photo-isomer compound which generates a photo-isomerization reaction to give anisotropy to the respective photoalignment layer. Kim in view of Gibbons, fails to teach that the liquid crystal display is driven by a field sequential color system.

However, Walker teaches that a field sequential color system is used to drive a liquid crystal display for the purpose of providing very high resolution (column 1, lines 49-61).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a field sequential color system to drive the liquid crystal display of Kim in view of Gibbons, in order to provide very high display resolution, as taught by Walker.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye, can be reached on (571)272-3186. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon.

Sow-Fun Hon

09/7/07